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Application No. 10/699,278  
Response to Office Action

Customer No. 01933

**Listing of Claims:**

1. (Currently Amended) A suspension apparatus of a multi-axle vehicle having at least three tire axles, comprising:

i) a front link ~~of which~~ including an upper end portion ~~is~~ connected to a vehicle body with a pin, and ~~of which~~ a lower end  
5 portion ~~is~~ in a vicinity of a front axle,

ii) a rear link ~~of which~~ including an upper end portion ~~is~~ connected to said vehicle body with a pin, and ~~of which~~ a lower end portion ~~is~~ in a vicinity of a rear axle adjacent to said front axle, and

10 iii) a connecting link for longitudinally connecting portions in vicinities of the respective lower end portions of said front link and said rear link so as to pair said front axle and said rear axle; ~~which are placed in vicinities of at least a pair of said front axle and said rear axle, with an optional adjacent front axle and rear axle being paired, and~~  
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~~wherein at least one quadric link structure formed by said vehicle body, said front link, said rear link and said connecting link form a quadric link structure, and said suspension apparatus comprises at least one said quadric link structure; and~~

20 ~~wherein said front axle is mounted to a vicinity of a front joint at a lower side of at least said one quadric link structure~~

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~~and said rear axle is mounted to a vicinity of a rear joint at  
the lower side of at least said one quadric link structure, and  
wherein in at least said one quadric link structure, a side  
length at a side of said connecting link is shorter than a side  
length at a side of said vehicle body.~~

Claims 2 and 3 (Canceled).

4. (Currently Amended) A suspension apparatus of a multi-  
axle vehicle having at least four tire axles, comprising:

- 1) a plurality of front links, each of which includes an  
upper end ~~portions are portion~~ connected to a vehicle body with  
pins, and ~~of which a lower end portion portions are in~~  
a vicinities vicinity of a respective front axles axle,
- ii) a plurality of rear links, each of which includes an  
upper end ~~portions are portion~~ connected to said vehicle body  
with pins, and ~~of which a lower end portion portions are in~~  
a vicinities vicinity of a respective rear axles axle, and
- iii) a plurality of connecting links, each of which for  
longitudinally ~~connecting connects~~ portions in vicinities of the  
respective lower end portions of a respective one of said front  
links and a respective one of said rear links [[,]] so as to pair  
~~which are placed in vicinities of said respective front axles and~~  
~~said respective rear axles of at least two pairs of said axles,~~

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~~including~~ such that said at least four axles form a pair at a  
forefront of the vehicle and a pair at a rear end of the vehicle,  
with a first axle and a second axle from a front of the vehicle  
20 ~~being made~~ forming the pair at the forefront, and a second axle  
and a first axle from a rear of said vehicle ~~being made~~ forming  
the pair at the rear end; and

wherein a plurality of quadric link structures are each  
formed by said vehicle body, said a respective front links link,  
25 said a respective rear links link and said a respective  
connecting links link, and

~~wherein said respective front axles are mounted to~~  
~~vicinities of front joints at lower sides of said respective~~  
~~quadric link structures and said respective rear axles are~~  
30 ~~mounted to vicinities of rear joints at the lower sides of said~~  
~~respective quadric link structures; and~~

~~wherein in said respective quadric link structures,~~  
respective side lengths ~~at sides~~ of said connecting links are  
shorter than respective side lengths ~~at sides~~ of said vehicle  
35 body.

5. (Currently Amended) The suspension apparatus of the  
multi-axle vehicle according to Claim 4, wherein ~~a number of~~ said  
at least four tire axles ~~is~~ comprise at least six tire axles; and

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5 wherein at least one pair ~~with of~~ an ~~optional~~ adjacent front axle and rear axle ~~being paired~~ is formed in a middle portion of said vehicle between said pair at the forefront and said pair at the rear end.

6. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 1, wherein ~~at least one of~~ said connecting ~~links~~ link is adjustable in length.

7. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 1, wherein ~~at least one of~~ said connecting ~~links~~ link comprises a suspension link extending which extends and ~~contracting contracts~~ in length in accordance  
5 with a load.

8. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 1, wherein one of a hydraulic cylinder ~~or and~~ a suspension cylinder for controlling an attitude of said quadric link structure is ~~placed in~~ provided  
5 at least one of spot between said vehicle body and said front link and between said vehicle body and said rear link.

9. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to Claim 6, wherein one of a

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hydraulic cylinder ~~or~~ and a suspension cylinder for controlling  
an attitude of said quadric link structure is ~~placed in~~ provided  
5 at least one of ~~spot~~ between said vehicle body and said front  
link and between said vehicle body and said rear link.

10. (Currently Amended) The suspension apparatus of the  
multi-axle vehicle according to Claim 7, wherein one of a  
hydraulic cylinder ~~or~~ and a suspension cylinder for controlling  
an attitude of said quadric link structure is ~~placed in~~ provided  
5 at least one of ~~spot~~ between said vehicle body and said front  
link and between said vehicle body and said rear link.

11. (Currently Amended) The suspension apparatus of the  
multi-axle vehicle according to claim 1, further comprising:

a suspension cylinder which is ~~placed in at least one spot~~  
provided between said vehicle body and said front link, and which  
5 controls rotation of said front link; and

a suspension cylinder which is ~~placed in at least one spot~~  
provided between said vehicle body and said rear link, and which  
controls rotation of said rear link,

wherein a length of said connecting link is selected to be  
10 one of a locked or controlled state, and a freely opened state  
~~are selectable for length of said connecting link.~~

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12. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 1, further comprising [[:]] one of a crawler belt ~~or and~~ a chain which is mounted ~~by being~~ wound around respective tired wheels of at least one of said pair  
5 of said front axle and said rear axle ~~which are paired~~.

Claims 13-16 (Canceled).

17. (Previously Presented) The suspension apparatus of the multi-axle vehicle according to claim 4, wherein at least one of said connecting links is adjustable in length.

18. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to Claim 17, wherein one of a hydraulic cylinder ~~or and~~ a suspension cylinder for controlling an attitude of at least one of said quadric link ~~structure~~  
5 ~~structures~~ is ~~placed in provided~~ at least one of spot between said vehicle body and a respective one of said front ~~link~~ links and between said vehicle body and a respective one of said rear ~~link~~ links.

19. (Previously Presented) The suspension apparatus of the multi-axle vehicle according to claim 5, wherein at least one of said connecting links is adjustable in length.

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20. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 19, wherein one of a hydraulic cylinder ~~or~~ and a suspension cylinder for controlling an attitude of at least one of said quadric link ~~structure~~  
5 structures is ~~placed in~~ provided at least one of ~~spot~~ between said vehicle body and a respective one of said front ~~link~~ links and between said vehicle body and a respective one of said rear ~~link~~ links.

Claims 21-24 (Canceled).

25. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 4, wherein at least one of said connecting links comprises a suspension link ~~extending~~ which extends and ~~contracting~~ contracts in length in accordance with a  
5 load.

26. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 25, wherein one of a hydraulic cylinder ~~or~~ and a suspension cylinder for controlling an attitude of at least one of said quadric link ~~structure~~  
5 structures is ~~placed in~~ provided at least one of ~~spot~~ between said vehicle body and a respective one of said front ~~link~~ links.

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links and between said vehicle body and a respective one of said rear ~~link~~ links.

27. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 5, wherein at least one of said connecting links comprises a suspension link extending which extends and ~~contracting contracts~~ in length in accordance with a load.

28. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 27, wherein one of a hydraulic cylinder ~~or~~ and a suspension cylinder for controlling an attitude of at least one of said quadric link ~~structure~~ structures is ~~placed in~~ provided at least one of spot between said vehicle body and a respective one of said front ~~link~~ links and between said vehicle body and a respective one of said rear ~~link~~ links.

Claims 29 and 30 (Canceled).

31. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 4, wherein one of a hydraulic cylinder ~~or~~ and a suspension cylinder for controlling an attitude of at least one of said quadric link ~~structure~~



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5 ~~structures is placed in provided~~ at least one of spot between said vehicle body and a respective one of said front ~~link~~ links and between said vehicle body and a respective one of said rear ~~link~~ links.

32. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 5, wherein one of a hydraulic cylinder ~~or and~~ a suspension cylinder for controlling an attitude of at least one of said quadric link structure

5 ~~structures is placed in provided~~ at least one of spot between said vehicle body and a respective one of said front ~~link~~ links and between said vehicle body and a respective one of said rear ~~link~~ links.

Claims 33 and 34 (Canceled).

35. (Currently Amended) The suspension apparatus of the multi-axle vehicle according to claim 4, further comprising:

a suspension cylinder which is ~~placed in at least one spot provided~~ between said vehicle body and a respective one of said front ~~link~~ links, and which controls rotation of said respective front link; and

5

a suspension cylinder which is ~~placed in at least one spot provided~~ between said vehicle body and a respective one of

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10 said rear ~~link~~ links, and which controls rotation of said  
respective rear link,

wherein a length of said connecting links is selected to be  
one of a locked or controlled state, and a freely opened state  
~~are selectable for length of said connecting link.~~

36. (Currently Amended) The suspension apparatus of the  
multi-axle vehicle according to claim 5, further comprising:

5 a suspension cylinder which is ~~placed in at least one spot~~  
provided between said vehicle body and a respective one of  
said front ~~link~~ links, and which controls rotation of said  
respective front link; and

10 a suspension cylinder which is ~~placed in at least one spot~~  
provided between said vehicle body and a respective one of  
said rear ~~link~~ links, and which controls rotation of said  
respective rear link,

wherein a length of said connecting links is selected to be  
one of a locked or controlled state, and a freely opened state  
~~are selectable for length of said connecting link.~~

Claims 37 and 38 (Canceled).

39. (Currently Amended) The suspension apparatus of the  
multi-axle vehicle according to claim 4, further comprising [[:]]

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5 one of a crawler belt ~~or and~~ a chain which is ~~mounted by being~~  
wound around respective tired wheels of at least one said pair of  
said front axle and said rear axle ~~which are paired~~.

5 40. (Currently Amended) The suspension apparatus of the  
multi-axle vehicle according to claim 5, further comprising [[:]]  
one of a crawler belt ~~or and~~ a chain which is ~~mounted by being~~  
wound around respective tired wheels of at least one said pair of  
said front axle and said rear axle ~~which are paired~~.

5 41. (New) The suspension apparatus of the multi-axle  
vehicle according to claim 1, wherein said front axle is mounted  
to a vicinity of a front joint at a lower side of said quadric  
link structure and said rear axle is mounted to a vicinity of a  
rear joint at the lower side of said quadric link structure.

42. (New) The suspension apparatus of the multi-axle vehicle  
according to claim 41, wherein said connecting link is adjustable  
in length.

43. (New) The suspension apparatus of the multi-axle  
vehicle according to Claim 42, wherein one of a hydraulic  
cylinder and a suspension cylinder for controlling an attitude of  
said quadric link structure is provided at least one of between

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- 5     said vehicle body and said front link and between said vehicle body and said rear link.

44. (New) The suspension apparatus of the multi-axle vehicle according to claim 41, wherein said connecting link comprises a suspension link which extends and contracts in length in accordance with a load.

- 5     45. (New) The suspension apparatus of the multi-axle vehicle according to Claim 44, wherein one of a hydraulic cylinder and a suspension cylinder for controlling an attitude of said quadric link structure is provided at least one of between said vehicle body and said front link and between said vehicle body and said rear link.

- 5     46. (New) The suspension apparatus of the multi-axle vehicle according to claim 41, wherein one of a hydraulic cylinder and a suspension cylinder for controlling an attitude of said quadric link structure is provided at least one of between said vehicle body and said front link and between said vehicle body and said rear link.

47. (New) The suspension apparatus of the multi-axle vehicle according to claim 41, further comprising:

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a suspension cylinder which is provided between said vehicle body and said front link, and which controls rotation of said front link; and

a suspension cylinder which is provided between said vehicle body and said rear link, and which controls rotation of said rear link,

wherein a length of said connecting link is selected to be one of a locked or controlled state, and a freely opened state.

48. (New) The suspension apparatus of the multi-axle vehicle according to claim 41, further comprising one of a crawler belt and a chain which is wound around respective tired wheels of at least one said pair of said front axle and said rear axle.

49. (New) The suspension apparatus of the multi-axle vehicle according to claim 4, wherein said respective front axles are mounted to vicinities of front joints at lower sides of respective quadric link structures and said respective rear axles are mounted to vicinities of rear joints at the lower sides of said respective quadric link structures.

50. (New) The suspension apparatus of the multi-axle vehicle according to Claim 49, wherein said at least four tire axles comprise at least six tire axles; and

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wherein at least one pair of an adjacent front axle and rear  
5 axle is formed in a middle portion of said vehicle between said  
pair at the forefront and said pair at the rear end.

51. (New) The suspension apparatus of the multi-axle  
vehicle according to claim 50, wherein at least one of said  
connecting links is adjustable in length.

52. (New) The suspension apparatus of the multi-axle  
vehicle according to claim 51, wherein one of a hydraulic  
cylinder and a suspension cylinder for controlling an attitude of  
at least one of said quadric link structures is provided at least  
5 one of between said vehicle body and a respective one of said  
front links and between said vehicle body and a respective one  
of said rear links.

53. (New) The suspension apparatus of the multi-axle  
vehicle according to claim 50, wherein at least one of said  
connecting links comprises a suspension link which extends and  
contracts in length in accordance with a load.

54. (New) The suspension apparatus of the multi-axle  
vehicle according to claim 53, wherein one of a hydraulic  
cylinder and a suspension cylinder for controlling an attitude of

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at least one of said quadric link structures is provided at least  
5 one of between said vehicle body and a respective one of said  
front links and between said vehicle body and a respective one  
of said rear links.

55. (New) The suspension apparatus of the multi-axle  
vehicle according to claim 50, wherein one of a hydraulic  
cylinder and a suspension cylinder for controlling an attitude of  
at least one of said quadric link structures is provided at least  
5 one of between said vehicle body and a respective one of said  
front links and between said vehicle body and a respective one  
of said rear links.

56. (New) The suspension apparatus of the multi-axle  
vehicle according to claim 50, further comprising:

a suspension cylinder which is provided between said vehicle  
body and a respective one of said front links, and which controls  
5 rotation of said respective front link; and

a suspension cylinder which is provided between said vehicle  
body and a respective one of said rear links, and which controls  
rotation of said respective rear link,

wherein a length of said connecting links is selected to be  
10 one of a locked or controlled state, and a freely opened state.

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57. (New) The suspension apparatus of the multi-axle vehicle according to claim 50, further comprising one of a crawler belt and a chain which is wound around respective tired wheels of at least one said pair of said front axle and said rear axle.

58. (New) The suspension apparatus of the multi-axle vehicle according to claim 49, wherein at least one of said connecting links is adjustable in length.

59. (New) The suspension apparatus of the multi-axle vehicle according to Claim 58, wherein one of a hydraulic cylinder and a suspension cylinder for controlling an attitude of at least one of said quadric link structures is provided at least one of between said vehicle body and a respective one of said front links and between said vehicle body and a respective one of said rear links.

60. (New) The suspension apparatus of the multi-axle vehicle according to claim 49, wherein at least one of said connecting links comprises a suspension link which extends and contracts in length in accordance with a load.



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61. (New) The suspension apparatus of the multi-axle vehicle according to claim 60, wherein one of a hydraulic cylinder and a suspension cylinder for controlling an attitude of at least one of said quadric link structures is provided at least one of between said vehicle body and a respective one of said front links and between said vehicle body and a respective one of said rear links.

62. (New) The suspension apparatus of the multi-axle vehicle according to claim 49, wherein one of a hydraulic cylinder and a suspension cylinder for controlling an attitude of at least one of said quadric link structures is provided at least one of between said vehicle body and a respective one of said front links and between said vehicle body and a respective one of said rear links.

63. (New) The suspension apparatus of the multi-axle vehicle according to claim 49, further comprising:  
a suspension cylinder which is provided between said vehicle body and a respective one of said front links, and which controls rotation of said respective front link; and

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a suspension cylinder which is provided between said vehicle body and a respective one of said rear links, and which controls rotation of said respective rear link,

10. wherein a length of said connecting links is selected to be one of a locked or controlled state, and a freely opened state.

64. (New) The suspension apparatus of the multi-axle vehicle according to claim 4, further comprising one of a crawler belt and a chain which is wound around respective tired wheels of at least one said pair of said front axle and said rear axle.

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